

**EHRNER & DELMAR**

PATENTS | TRADEMARKS | DESIGNS

PCT/SE2004/001758

Atlas Copco Rock Drills AB et al

Our ref.: 72423PC/SH

Term: 29 October 2005

To

The Swedish Patent Office

Stockholm

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This is a response to the Written Opinion of the International Searching Authority in the above application.

According to the Written Opinion, dated 17 March 2005, the claims 1-21 are not considered to involve an inventive step.

The argumentation in the Written Opinion is based on

D1: US 6637522 B2

D1 discloses an arrangement for use during rock drilling. The object of the disclosed arrangement is to prevent overload of the flushing mechanism using computer control. During drilling, at least one parameter of the flow of the flushing medium, such as a pressure, is continuously measured, and when changes are detected, the drilling machine feed pressure (feed rate) is automatically regulated to prevent overload. When the flushing mechanism is about to become overloaded, the feed of the drilling machine is reduced or stopped to allow the flushing mechanism to recover. The object of D1 is to prevent that the overload causes a clogging of the flushing mechanism due to inability of removing drill cuttings fast enough. The system in D1 is particularly suitable for use when going from hard rock drilling into drilling in softer material.

The present invention relates to a method and a system for controlling power consumption during a rock drilling process with a rock drilling apparatus. The rock drilling apparatus includes main power supply means for supplying power to the rock drilling process, which at least includes the sub-processes of percussion and/or rotation and flushing. The flush power is adjusted at least partly as a function of hole depth. The percussion power and/or rotational power and the flush power are controlled such that the total power consumption of each sub-process is controlled.

The present invention differs substantially from D1 in that flush power is adjusted at least partly as a function of hole depth, and that the percussion power and/or the rotational power and the flush power are controlled such that the total power consumption of each sub-process is controlled. In D1, however, the flush power is not at all controlled. In D1, one or more parameters regarding the flushing mechanism is measured, and if it is detected that the flushing mechanism is, or is about to be, overloaded the feed pressure (feed rate) and/or percussion pressure is reduced to allow the flushing mechanism to recover and return to normal flushing. Accordingly, clogging of the flushing mechanism is prevented, and the drilling process is optimised in the manner that it is not subject to undesired stops.

Accordingly, the solution described in D1, which thus differs completely from the present invention, has totally different advantages as compared to the present invention. D1 has the advantage that an overload of the flushing mechanism can be anticipated, and that the drilling thereby can be "optimised" by reducing downtime, which otherwise would be required to dismount the drill bit and clean the passages of the flushing mechanism. The present invention, on the other hand, has the object to control the power consumption so that only the amount of power that at present is required is used. This means that at the beginning of the drilling of a hole, when the hole depth is small, only the amount of power that is required to keep this hole clean is used, which allows that the remaining power may be used for faster drilling (alternatively, the present invention may be used for saving power, resulting in for

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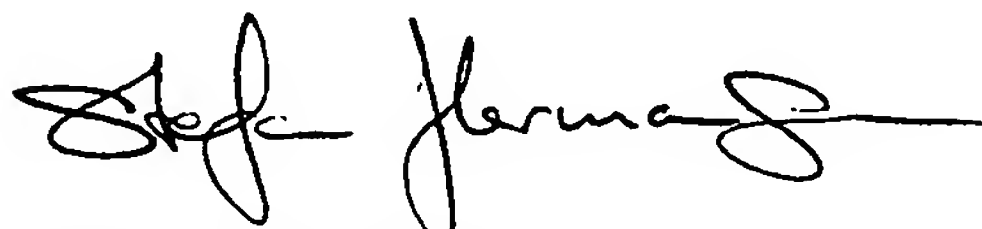
example less fuel consumption, less noise and less heat). As the hole gets deeper and deeper, the flush power is increased to ensure that the hole still is kept clean.

Consequently, in view of the above, we believe that the claims 1-21 are novel, involve an inventive step and are industrially applicable.

In the event that the examiner still has any remaining objections, it is respectfully requested with reference to rule 66.6 that the examiner takes a telephone contact with the undersigned.

Stockholm, 12 July 2005

EHRNER & DELMAR PATENTBYRÅ AB



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